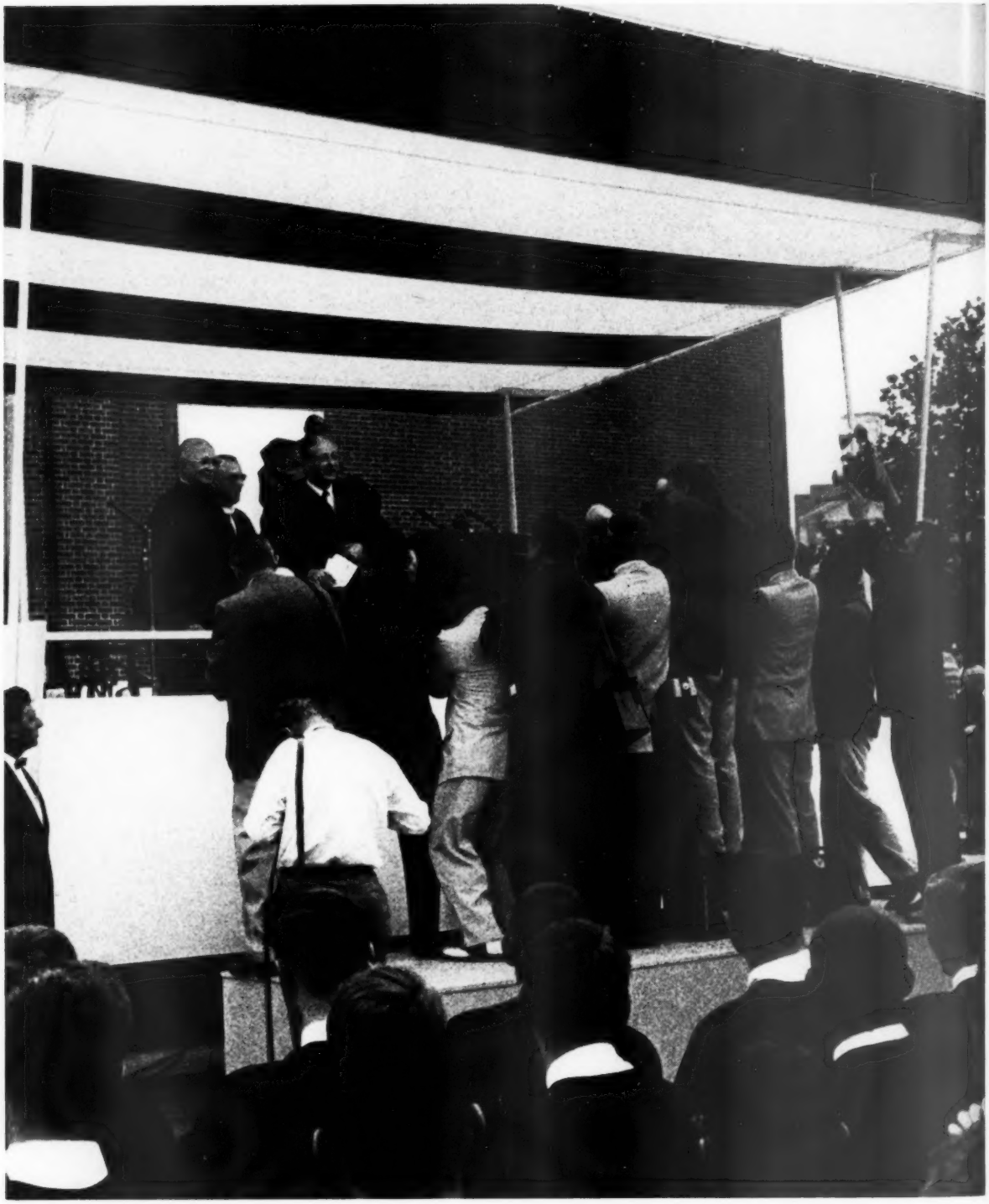
JUNE 1958 · 35c

The Johns Hopkins Magazine

THE COLORS OF COMMENCEMENT—PAGE 14



Commencement, 1958

This was the scene in Wyman Quadrangle at Johns Hopkins on June 10, after honorary degrees of Doctor of Laws had been conferred on President Dwight D. Eisenhower (at left on platform) and the Prime Minister of Great Britain, Harold Macmillan (right). The president of the University, Milton S. Eisenhower, is in the center.

The Johns Hopkins Magazine

VOLUME IX June, 1958 NUMBER 8

A HOSPITAL'S SELF-EXAMINATION 2
A new approach to rising cost and staffing problems.

TEN YEARS OF HOPKINS TV 6
Here are highlights of a pioneering television decade.

BUSINESSMAN-SCIENTIST 10
The success story of a firm born of a Ph.D.'s dream.

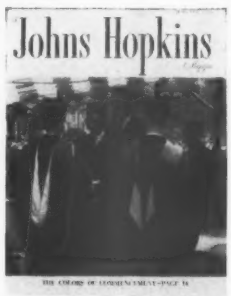
WHAT THE COLORS MEAN 14
Some clues to academic dress and what it signifies.

A JOHNS HOPKINS GAZETTE: NEWS AND NOTES 14

THE YEAR IN SPORTS AT JOHNS HOPKINS ..... Cover III

Copyright 1958 by the Johns Hopkins University

The Cover: All over America this month, commencement exercises are adding their color to the landscape. A perennial topic among the audiences attending the exercises is academic costume: the meaning of the several kinds of robes worn in the processions of graduates and faculty members, and of the colors that line their hoods. In its usual spirit of service, The Johns Hopkins Magazine presents a brief guide (see page 14).



PHOTOGRAPH BY ALAN J. BEARDEN

Editorial Committee

P. STEWART MACAULAY
Chairman

DON CAMERON ALLEN PAUL W. BACHMAN PHILIP BARD
PALMER H. FUTCHER RUSSELL A. NELSON
SIDNEY PAINTER ROBERT H. ROY THOMAS B. TURNER
BENJAMIN H. WILLIER

CORBIN GWALTNEY *Editor* RICHARD LIDZ *Associate*

THE JOHNS HOPKINS MAGAZINE is published monthly from October to June inclusive, except that the February and March issues are combined into one number, by the Johns Hopkins University, Baltimore 18, Maryland. Subscription, $2.00 per year; single copies, 35 cents. Entered as second-class matter at the Post Office at Baltimore, Maryland, under the Act of March 3, 1879. EDITORIAL OFFICE: The Johns Hopkins University, Baltimore 18, Maryland. Notice of change of address should reach the magazine at least thirty days before the publication date of the issue with which it is to take effect. When ordering a change of address, please enclose your present address label or an exact copy of it.

MEDICAL-DENTAL EXCHANGE

✶

Financial Services Since 1938

✶

DELINQUENT COLLECTIONS *for the* PROFESSION

An Audited and Bonded Credit Service for the Doctor, Hospital and Patient

✶

Medical-Dental Collections INC.

809 CATHEDRAL ST.
BALTIMORE 1, MD.

LEO BADART
PRESIDENT

Audited by
WILLIAM A. GILLESPIE, C.P.A.

A HOSPITAL EXAM: SUBJECT, THE HOSPITAL

Costs have risen twice as fast as the U. S. cost of living, and staff problems are acute. What can hospitals do to meet them?

THERE are about nine thousand hospitals in the United States (seventy-five years ago there were 178). They contain almost 1.7 million beds, maintain an average daily census just under 1.5 million patients, and employ more than one million people. In 1957, hospital admissions totaled more than twenty-two million.

Operating expenses for America's hospitals were more than six billion dollars last year. (Health is the nation's sixth largest "industry.") The Bureau of Labor Statistics reports that the costs of hospital care in 1957 were 149 per cent above their immediate post-war level. Since 1936, hospitals have had to increase their rates almost fourfold, while the general cost of living in the United States has doubled. The very size of aggregate hospital activity makes it a topic of national importance, and since every citizen is subject to accident and illness, hospital problems are of personal interest to all.

The total number of people involved in the operation of any one hospital, even a large one, seldom exceeds several thousand—small compared to a military or an industrial organization. But the familiar unifying forces, the threat of direct competition and the profit motive, which simplify the problem of objectives for the military and industry, do not exist in hospitals. They give way to a set of more subtle, though equally forceful, motivations and objectives.

A hospital is not merely a hotel which provides clean linen and three meals a day—though most do have their own laundries and dietary departments. A "day of care" is considerably more than putting a patient in a bed for a day. The hospital must provide the services of physicians and nurses; it must have technical equipment available when needed. Direct patient care is augmented by clinical laboratories, a pharmacy, kitchens, a medical records department, a housekeeping department, an admitting office, and an array of supply and administrative services which include everything from power plants to emergency facilities. The key to successful hospital management is learning how all these operations interrelate, and then finding how best to coordinate them.

IN 1956 a significant development in hospital management took place at the Johns Hopkins Hospital—the formation of an Operations Research Division, charged with the responsibility of studying and analyzing the Hospital's over-all operations and problems. The goal of the program is to provide factual bases for management decisions.

In setting up an operations research program, the Hospital followed the lead of the military, which undertook this approach to problems immediately after World War II. Recently many industries have entered the field. They needed decision-making aids because rapid technological, economic, and social changes have increased the complexity of executive decisions.

The Operations Research Office of the Johns Hopkins University was one of the country's pioneer groups in this work. ORO was set up at the end of World War II to do contract research in cooperation with the Army. Since its beginning there has been a kinship between the ORO and the University's department of industrial engineering, whose chief concern is the study of human organization and the operations of systems of men and machines.

PHOTOGRAPHS BY ALAN J. BEARDEN

Meeting the needs of patients requires a hospital to maintain a fantastically complex supply system. Not only must it perform a "hotel" function, furnishing linens and food, but it must build its entire operation around the patients' medical needs, supplying medicines and special-care equipment. At the left are the supplies required in one day by a typical patient.

Operations research is an analytic approach which accepts a problem whatever it is, regardless of complexity, and then draws on whatever resources are necessary to solve it. Since OR problems are usually quite complex, the "resources" used to solve them are a mixed team of researchers. Such problems are most effectively solved if they can be examined by an interdisciplinary group, representing a number of fields in the sciences and arts. The examination of a problem follows the "total system" approach, in which the over-all operation is kept constantly in mind.

Traditionally, the laboratories for faculty and students of industrial engineering have been real organizations. Several years ago, Russell A. Nelson, director of the Johns Hopkins Hospital, invited students of the University to make studies of Hospital activities. These studies were for dissertation purposes and were limited to what one person could do in one or two years. But they demonstrated the potential contribution of people trained to do research in organization and management—but not specifically hospital management. At the same time, the studies demonstrated the difficulty of actually making changes in organization and procedure.

ESTABLISHMENT of the Operations Research Division in the Hospital meant continuity and coordination of research there. To the University it meant a formal mechanism for sending faculty and students of various departments into the Hospital to do research. To the researcher it meant a home base, and knowledge that his project would be part of a continuing program.

To direct the Hospital's OR program, an associate professor of industrial engineering at Homewood was chosen: Charles D. Flagle, B.E. '40, DR. ENG. '55. Dr. Flagle, a tall, hurried man in his mid-thirties, when not in Washington, or elsewhere, consulting for the U. S. Public Health Service, shuttles between his office in Maryland Hall, where he teaches an undergraduate course in production engineering and graduate courses in queueing theory and simulation techniques, and his office at the Hospital, where he has five research assistants and six students working on a variety of OR problems.

Shortly after Dr. Flagle became director of the new program, the School of Nursing and the Nursing Service appointed Ruth A. Preston, assistant director for methods improvement, as liaison between the OR Division and the nursing service. Miss Preston, a graduate of Cornell University and the Johns Hopkins School of Nursing, last year received an M.S. in education from Syracuse University. She participates in the design and carrying out of OR projects and is chairman of the committee responsible for changing nursing methods.

Dr. Flagle and his group asked Hospital staff members to suggest the problems they considered most

Studying a hospital's operations and planning improvements in its services, while keeping a watchful eye on economy, is the assignment of the Operations Research Division at Johns Hopkins. Charles D. Flagle, above, heads the division, and Ruth Preston, right, maintains liaison between OR and nursing services.

pressing or suitable for study. The suggestions were numerous and diverse: "Should we adopt a new method for measuring body temperature?" "How can we reduce delays in caring for outpatients?" "With whom should responsibility for transporting patients about the hospital be placed?" "How can we reduce labor turnover among the auxiliary staff?" "What can be done to increase the practical upper limit of the hospital census?" "What should administrators talk about in their meetings?" "At what time intervals should deliveries of supplies be made to their points of use?"

THE first problem faced by the operations research staff was to evaluate the suggestions for studies in light of OR's own capabilities, and to abstract the basic problems. Next, the importance of the basic problems was assessed in terms of value to the Hospital.

To determine "value to the Hospital" implies knowledge of hospital objectives. But a hospital consists of several autonomous groups, each with long-established practices and traditions, and each with objectives which are not always compatible with those of another group.

Among the medical staff, the practice and teaching of medicine, the learning of medicine, and medical research are the prime interests. Among the nursing staff, giving high quality care to patients is the major concern, although nurses, too, are concerned with teaching and learning. Administrators must maintain the economic stability of the institution, while also striving for the re-creation of the physical plant.

For all the separate objectives, there is a central action toward which all efforts is bent. This is the care of the patient. Around this concern for patient care, the operations research program is built. Almost all of the study problems are planned around the two distinct forms of care—inpatient and outpatient.

CONTINUOUS, hour-to-hour responsibility for patients rests with the nursing service—nurses themselves, plus such non-professionals as aides and orderlies. While many patient-care activities—baths, meals, medications—can be anticipated and planned, there are many patient demands which, by their nature, cannot be scheduled. There are also demands, usually unscheduled,

The Operations Research Division studies all phases of the Johns Hopkins Hospital's procedures. Robert Connor, left, has investigated the varying needs of bed patients for staff services. Dr. Stuart Wolff and Abraham Soriano, above, study outpatient services in the ophthalmological clinic.

placed on the nursing staff by supporting services, such as radiology. While responsibility for patient care rests with the nursing staff, it is difficult, because of these demands on their time and services imposed from other sources, to plan the nursing activities with optimum effectiveness.

A natural reaction under such circumstances is to provide a standby labor reserve to meet any unanticipated peak loads. Providing labor for these peak situations results in a large, non-professional staff, much of which is idle a considerable part of the time. (At Johns Hopkins the paid staff now outnumbers patients three to one.)

The traditional patterns of patient care were established many years ago, when there was much volunteer labor available in hospitals. Volunteers serviced equipment and kept it clean. As a result, hospitals operated quite economically and had little need to replace capital supplies. With volunteers performing all the auxiliary tasks, each ward was run on a self-sufficient basis; trained personnel had plenty of time for direct patient care. Close personal relationships could exist between patient, nurse, and doctor.

The economic and social changes of recent years have deprived hospitals of much of their free help. The number of paid aides and orderlies has greatly increased. At Johns Hopkins, for example, this auxiliary personnel now comprises forty per cent of the thousand-member nursing staff. While the pay of the auxiliaries is low, compared to what they might make in industry, it is high in relation to their productivity. As staffing costs have gone up, the hospital-supply industry has sought, and made important gains in developing, low-cost, labor-saving products.

WHAT is the most efficient and most economical way to staff a hospital? To find out, Dr. Flagle and his staff assessed the costs of maintaining the auxiliary staff—aides and orderlies—and compared these costs with those of labor-saving supplies. The same analytic techniques first used in military operations research to predict casualty rates in battles were applied to the auxiliary staff study.

Dr. Flagle found that the turnover among these

Continued on page 22

13
CG

TEN YEARS OF HOPKINS TV

Only one other program on network television has outlasted the University's. Here are some highlights of a pioneering decade

A FEW WEEKS ago, "Johns Hopkins File 7," the University's weekly television show, presented a program called "Ten Years from Today." Although its participants, President Milton S. Eisenhower and seven Johns Hopkins faculty men, were primarily concerned with venturing some predictions about things to come, they permitted themselves a glance backward, also. For the program had special significance: it marked the tenth anniversary of Johns Hopkins television itself.

Exactly a decade earlier, in the television medium's infancy, Franco Rasetti, the Johns Hopkins physicist, had stepped before a camera in Remsen Hall to take part in the University's first show. In the intervening ten years the program had gained an international reputation, won a string of awards and citations unequaled by any program in its class, rolled up the longest continuous run of any educational TV production, and outlasted every other network show with the exception of "Kraft Television Theater." It had faced, and survived, some of the ruggedest competition that big-time television could offer: at various times in its history, it was presented at the same hour as Milton Berle, "Dragnet," George Gobel, "$64,000 Question," and "Gunsmoke." It had had an annual budget that would not begin to pay for a single half-hour commercial show. Although, from the beginning, it had had a warm reception from television critics, most of them said privately, and some publicly, that once television time became a scarce commodity, the Hopkins program would quietly be elbowed off the networks.

The use of television as a means of conveying educational information from a university to the public was an idea in the mind of Lynn Poole in 1946 when he became the first director of public relations at Johns Hopkins. At the time, there was no television outlet in the city of Baltimore. But when WMAR-TV went on the air two years later, Lynn Poole was ready to offer the station the first Hopkins program.

Except for the blessings of a few Johns Hopkins officials and faculty members, Poole had little to go on. He had no money. He encountered considerable skepticism among faculty members who were not convinced that academic dignity could be preserved in a medium that was, essentially, a branch of show business. A few faculty men, however, agreed to give it a try, and the University launched its first series, "The Johns Hopkins Science Review," in March, 1948. In the fall, the CBS network took the show for its four-station hookup: Baltimore, Washington, Philadelphia, and New York.

Lynn Poole was convinced from the start that the best way to extend teaching beyond the classroom and laboratory was to feature teachers and scholars themselves on the program. To him there was a feeling of immediacy in having an authority tell his own story, in having the man who actually did the work bring new and stimulating ideas to the viewer. No matter that a scholar might lack the histrionic polish of a professional actor, or occasionally miss a cue or muff a line; what he lacked in theatrical talent he would more than make up in authoritativeness and authenticity, Poole felt. The show's producer resisted many attempts, in the early days, to take the professor off the program and present the material through dramatic productions.

But Poole realized, also, that television is an entertainment medium and that no show can survive if it does not have entertainment value. The problem was a delicate one: balancing dignity and enough showmanship to make the program appealing to lay viewers.

FROM the beginning Poole was given authority to carry out his ideas without interference. He and his

staff, holding fast to this freedom and aware of the responsibility that went with it, were to make the adventure in television programming one of the most unusual in the history of the new medium. They ignored old taboos and experimented with new techniques. They began probing areas of knowledge that no other television program had dared to tangle with.

One of the most memorable early shows featured Russell H. Morgan, professor of radiology at Johns Hopkins. Dr. Morgan joined two other doctors, one in New York and one in Chicago, in the first intercity medical consultation in history. It was broadcast live to twenty-six cities.

In the fall of 1952 the "Science Review" brought space travel out of the realms of science fiction with a three-part series entitled "Man Will Conquer Space." Following his theory that the program should not confine itself to developments on the Johns Hopkins campus or by Johns Hopkins professors, Poole had as his guests U.C.L.A.'s space expert, Heinz Haber; the chairman of the Hopkins department of aeronautics, Francis H. Clauser, and his Princeton counterpart, Martin Summerfield; and the Army's missiles expert, Wernher von Braun.

As the program approached its fifth year on the air, it plunged into a bold and controversial series of three programs on cancer. They were to consider, openly and candidly, the subject of cancer of the breast and cervix. Expecting some adverse criticism, Poole and his associates were rewarded with a flood of mail praising the show. Stan Anderson, writing in the Cleveland *Press*, said of the series, "Its current programs on the fight against cancer are typical of the high standards 'Science Review' has followed in disseminating something besides ordinary information."

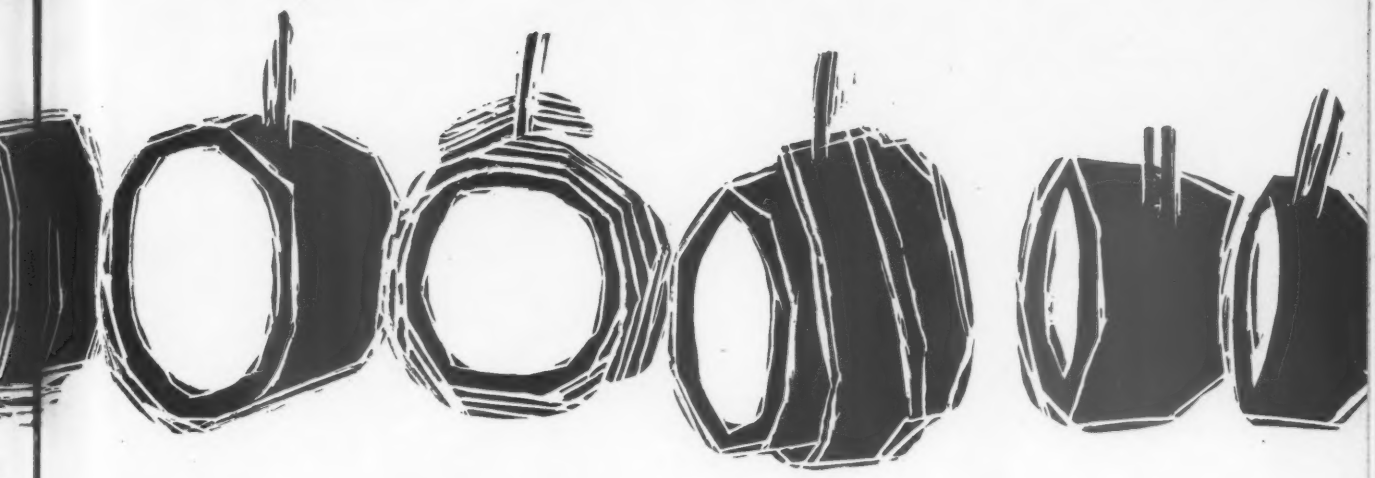
Although commercial sponsorship of the Hopkins programs has been impossible, except for one eight-week period in 1950 when it was sponsored by the Davison Chemical Company, industry has been called upon for assistance when needed. Credit is always given, but care is taken to see that the programs do not become commercials for the companies. Industry has always been willing to coöperate under these terms, and the same kind of coöperation has been received from government agencies.

One of the objectives of the Johns Hopkins television ventures has been to experiment with the medium itself. Wrote Dean A. Myers in the Columbus, Ohio, *Dispatch*, "All the present clamor over educational television, complete with educators' fears, hesitancies, bickerings, backups, shyings, weavings, and self-conscious soul-searchings, pales beside the achievement of this one university, which . . . took the one bold and necessary step in educational TV: it went on the air."

One of the significant Hopkins contributions was in the area of medical programming. Medical scientists at Johns Hopkins proved they could appear on the program without compromising their professional ethics or jeopardizing their scientific integrity. They showed that it is possible to maintain dignity in television presentations, guard against fact distortions, and rule out the sensational for sensation's sake. The example has been followed by medical programs throughout the country.

The Johns Hopkins program has been able to attract a long list of distinguished guests as a result of its reputation for presenting material in its true light. Guests were never asked to do ridiculous things; they were assured that subject-matter would not be twisted in an effort to make it dramatic. And as a consequence of this reputation, Johns Hopkins television set the tone for many other science and informational programs which later appeared on both local stations and the networks.

In 1950, the "Science Review" joined the DuMont network and began originating its programs in the studios of WAAM in Baltimore. There it remained, to



build an enviable following. Reviewers in magazines and newspapers across the country spurred the show on. That year the New York *Times* critic, Jack Gould, put the program on his honor roll of top shows. And, in the same season, the Hopkins efforts were honored with television's highest award, the George Foster Peabody Citation, as the nation's outstanding educational television show.

In 1951 the "Science Review" became the first American program to be seen in Europe. Radiodiffusion Française, through UNESCO, requested kinescope recordings for telecasting in France. Later, the United Nations organization distributed the program in fifteen foreign countries. And in 1952 the British Broadcasting Corporation invited Johns Hopkins to be the first American organization to present programs in Great Britain. Lynn Poole, as a guest of the BBC, on three programs acted as host and co-producer, with the BBC's Andrew Miller-Jones, with British scholars as his guests. The programs were kinescoped and flown to the United States for showing to the American public. Finally, in 1952, the "Science Review" became the first U. S. network show to be regularly scheduled by the Canadian Broadcasting Corporation's television network.

Before its fifth birthday the program had received ten national TV honors, including a second George Foster Peabody award; it was the only show to be honored twice by the Peabody committee.

In 1955 an agreement between Johns Hopkins, Station WAAM, and the American Broadcasting Company inaugurated a new program, "Tomorrow's Careers," on ABC-TV. The series ran for more than a year, treating a different career each week, with a frank portrayal of the disadvantages and advantages, the prospects for pay, and the satisfactions to be derived from various vocations.

In the fall of 1956, Johns Hopkins was back on the ABC network, this time with a format not restricted to careers. Entitled "Johns Hopkins File 7," it used the successful techniques developed on the "Johns Hopkins Science Review" but had a broader scope: education, science, the arts. It has dealt with subjects ranging from brainwashing to the archaeology of the Holy Land; from the secret life of medieval knights to the science of the future. Currently the series is in its second year, still originating in the studios of the Baltimore affiliate of the American Broadcasting Company, which recently changed its call letters from WAAM to WJZ-TV.

THE JOB of producing nearly four hundred half-hour television programs has been a staggering one. Visitors, observing the amount of work involved, sometimes ask Lynn Poole, "Is it worth it?"

If results from such an undertaking as Johns Hopkins television could be measured, the record would surely be an impressive one. The program has proved popular with school teachers and pupils, for example. A number of science teachers build classroom discussions around the program's weekly topics, and some give extra credit for oral or written reports on the telecasts. All over the country, PTA groups, school systems, and individual teachers include the Hopkins shows on their lists of recommended programs for students and parents.

For the University, the show has been an invaluable public-relations activity. To the many persons who once thought of Johns Hopkins as a medical institution only, the program has brought information about the full range of the University's teaching and research. High-school students, having watched the show in distant cities, frequently report that they thus learned for the first time of Johns Hopkins work in fields that interest them, and they apply for admission to the University as a result.

Is it worth it?

Lynn Poole and his colleagues are inclined to answer, "Yes."

—LEO GEIER

Mr. Geier is the author of the recently-published book, "Ten Years with Television at Johns Hopkins."

BUSINESSMAN SCIENTIST

With no money or business training, Walter S. Baird, a young Hopkins Ph.D., set up his own firm—and made a success of it

In the midst of the depression, when "things were pretty low," Walter S. Baird received his PH.D. in electrical engineering from Johns Hopkins. He went to Harvard as an instructor but, after a year there, decided that he did not have the temperament for a teaching career.

When he left Harvard he went to work at the Watertown Arsenal. His official status was blueprint operator, but actually he was assistant to the director of the laboratory and built an x-ray diffraction laboratory there.

One day, over a cup of coffee, he and two friends decided to go into business as soon as they could. "We felt," he says, "that there was something we knew how to do, perhaps better than anyone else. We had engineering interests rather than just pure science interests, and the conditions of the economy were such that we certainly couldn't hurt ourselves more by trying business than by trying something else. Further, we had a desire for independence of operation."

While still working at the arsenal, Baird received an order from a friend who needed an x-ray tube. Baird Associates, a partnership, had made its first sale. While he was at it, Dr. Baird built two tubes, hoping to sell the second one also. He still has it in his Cambridge, Massachusetts, office. "Like all engineers when they haven't learned better," he says, "we wanted to make changes as soon as we'd finished it."

Walter S. Baird, Ph.D. '33 (standing), chairman of the board of Baird-Atomic.

As A graduate student at Johns Hopkins, Baird learned to work with his hands—running a lathe, learning how to build something from scratch. He considers this one of the useful things he learned at Johns Hopkins, although it was not part of the formal course of instruction. It was especially useful during the early days of Baird Associates, because the partners served not only as managers but as shop hands, also.

Dr. Baird thinks the most important things he learned at Hopkins came not so much from formal courses but from rubbing elbows with his fellow graduate students and working closely with his professors. They taught him among other things that a measurement never has to be made again if it's done right the first time. Baird had a great deal of freedom in his work, being able to roam from physics to engineering to chemistry; he was working toward the degree of Doctor of Philosophy in electrical engineering.

He says that it took some time for him fully to appreciate the training he got from John B. Whitehead, the late professor of electrical engineering. "He was a disciplinarian, and most youngsters don't like disciplinarians. When he was chairman of a colloquium, he made us stand on our feet to speak and corrected our English. He kept sticking needles in us all the time; it was often humiliating, but it was remembered. He was a gentleman, an engineer, a scholar with high standards.

Photographs for The Johns Hopkins Magazine by Alan J. Bearden

"Professor [Alexander Graham] Christie taught that you don't have to know calculus to get an answer; you can use a slide rule." One of the basic philosophies of the Engineering School was that engineers are supposed to make things that are useful, and to make them better and cheaper. Professor Christie always wrote the word *Steam* as *$team*, to remind his students that the main function of engineers is to make things economically; to be aware of costs. The contribution of such faculty men as Professors Hubbard, Kouwenhoven ("Wild Bill," he calls him), Pfund, Pullen, and Herzfeld was invaluable to his education, Dr. Baird says. "By association with such men, something is bound to rub off."

He recalls that often the graduate students would bring their lunches or suppers and work late into the night. "W. C. Price was at Hopkins as a graduate student, working with the vacuum spectrograph and a noisy hot spark. Whenever the hot spark stopped, we all knew that this was the signal to quit work and go down to the local pub for a beer and talk for an hour or so. From these sessions I learned a great deal. In the period when I was in school, things were really rough financially for everyone, but there was a tremendous communion of interests."

Robert Williams Wood would often sit in on a colloquium. If at the end he would say, "You have heard a good colloquium, well given," it was high praise; he did this seldom. Wood, whose field of interest was physical optics, had a major influence on Baird's future. It was Wood who developed the diffraction gratings used in spectroscopy, and Baird Associates' first major instrument was the diffraction grating spectrograph.

THE spectrograph is an instrument which breaks up light into its various components—determined by different wave lengths—for use in qualitative and quantitative analysis. One of the best methods of dispersing light is by the diffraction grating, a disk of glass on which has been cut a series of precisely equidistant grooved lines, fifteen thousand or so to the inch. The leading producers of spectrographs in the United States, England, and Germany, however, used only prisms, because they did not know how to rule gratings. Through his relationship with Dr. Wood, Baird was able to get gratings from Johns Hopkins by purchasing them or by exchanging them for completed instruments.

The need for spectrographs began to increase. Prob-

Charles H. Shaw, Ph.D. '33, now professor of physics at Ohio State, meets with Dr. Baird, his Hopkins classmate, during a summer stay at Baird-Atomic headquarters.

Bruce H. Billings, Ph.D. '43, is a vice president of Baird-Atomic, with responsibility for the company's scientific activities.

lems were growing in places like the Bureau of Mines, where more samples were being received than could be handled by chemical analysis. Steel companies began to see the possibilities of using spectrographs for quantitative analysis and quality control. Baird Associates, as the only company making spectrographs with diffraction gratings, had a clear field.

Even though the development prospects were excellent, the early days at Baird Associates were touch and go. Dr. Baird's wife tells him that he married her because he owed her so much money for being his secretary. He admits that in the early days the thirty or forty dollars he owed her seemed like an awful lot of money. There were many times when the Associates would receive a check and spend it the same night to pay off creditors and employees.

Had he known, while he was still in school, that he would be going into business, Dr. Baird is sure that he would have taken some courses in business administration. "Any graduate student in engineering should take some work in business economics," he says, "and I don't mean just a superficial briefing."

None of the three original partners in Baird Associates—all men with graduate degrees in the sciences—had had any such training. When they started out, they assumed they could learn about business procedures as they went along. At the outset Dr. Baird could hardly recognize a balance sheet, much less read one. But he learned fast; he had to. (When he got his first order, Dr Baird thought he could simply go to a bank and borrow some money. The discovery that he needed collateral, he says, was one of the great shocks of his life.)

WHAT the company lacked in business experience, it more than made up for in scientific excellence. Dr. Baird attributes his firm's success in research and development largely to the quality and spirit of its research group. The company now has one hundred and ten people with bachelor's degrees, about twenty with the master's, and eighteen with PH.D.'s. They constitute a laboratory, specializing in physics and electronics, that is better, says Dr. Baird, "than ninety per cent of the universities in the United States."

Dr. Baird attributes the unusual spirit of the scientists to Bruce H. Billings, the firm's vice president and technical director, and "Mister Science" for the company. Dr. Billings, who earned his PH.D. in physics from Johns Hopkins in 1943, is responsible for keeping the company scientifically up to date.

When Bruce Billings joined the firm, the research lab had fifteen people. He built the group to its present size, imbuing it with the urge to pioneer. "Some research directors," says Dr. Baird, "can't resist solving all the problems themselves. Men like Dr. Billings insist that the individual 'stew in his own juice' and complete his project with his own improvisation. This builds the kind of imagination, drive, and spirit that make really great scientists and also great laboratories."

Dr. Baird, who did his undergraduate study in the humanities at St. John's College in Annapolis, believes in a broad liberal arts background in preparation for scientific graduate study. In looking for new men, after the usual examination of qualifications, he is concerned mostly with their ability to communicate —either on paper or to the people around them. Beyond that, the company looks for men who obviously have the desire to do something important with their training; to really amount to something. "We are looking for those who are self-starters, those carrying a torch," Dr. Baird says.

He believes that large industrial or government laboratories generate more of a spark in their personnel than do graduate schools. Industry, he says, gives its people the impression that what they are doing is important; graduate schools often have difficulty getting this point over to their students.

Continued on page 21

A Johns Hopkins Gazette

AN UNOFFICIAL COMPENDIUM OF FACULTY AND ALUMNI APPOINTMENTS, HONORS, AND ACCOMPLISHMENTS

WHAT THE COLORS MEAN

ALAN J. BEARDEN

Some of the most colorful ceremonies to be seen in America are taking place this month: the commencement exercises of the country's hundreds of colleges and universities. Much of the color comes from the costumes of the men and women taking part: costumes with a long tradition behind them.

The history of academic dress reaches far back into the early days of the oldest universities. Gowns and hoods were probably necessary for warmth in the unheated buildings frequented by medieval scholars.

In the United States, a code of academic dress was adopted about sixty years ago, at a conference of institutional representatives called for the purpose. Gowns have pointed sleeves for the bachelor's degrees, long closed sleeves (with a slit for the arms) for the master's degrees, and bell-shaped open sleeves for the doctoral degrees. The hoods are three feet long for the bachelors, three and a half feet for the masters, and four feet for the doctors. The cap is the same for all degrees, except that a golden tassel may be worn on the doctors' caps.

Gown and hood are often trimmed with velvet of a color indicating the field of knowledge of the wearer. Some of the frequently seen colors are white (arts and letters), light blue (education), orange (engineering), purple (law), green (medicine), dark blue (philosophy), salmon pink (public health), and scarlet (theology).

Institutional colors may also be seen on the gowns of some British universities and Harvard (crimson) and Yale (blue). At Johns Hopkins, hoods are lined with the University's colors: a field of sable with chevrons of old gold.

BOOKS

The late Arthur F. Bentley, B.A. '92, PH.D. '95 (political economy): *Life, Language, Law: Essays in Honor of Arthur F. Bentley*, edited by Richard W. Taylor (Antioch, $4.50).

Louis R. Harlan, PH.D. '55 (history): *Separate and Unequal: Public School Campaigns and Racism in the Southern Seaboard States, 1901–1915* (North Carolina, $6).

Robert C. Hartmann, B.A. '41, M.D. '44, Fellow '48–'49, '51–'52 (medicine), and Paul F. Guenther, translators: *The Chemistry of Blood Coagulation* by Paul Morawitz (Thomas).

Alma E. Hiller, fac. '15–'18 (medicine): *Practical Clinical Chemistry* (Thomas, $6.50).

Kemp Malone, Caroline Donovan professor emeritus of English: *Studies in Heroic Legend and in Current Speech*, edited by Stefan Einarsson, professor of Scandinavian Philology, and Norman Eliason (Rosenkilde and Bagger, $7.25).

The late Frank Jewett Mather, Jr., PH.D. '92 (English): *Charles Herbert Moore, Landscape Painter* (Princeton).

The late Adolf Meyer, professor of psychiatry '10–'23, Henry Phipps professor of psychiatry '23–'41, professor emeritus of psychiatry '41–'50: *Psychobiology, A Science of Man*, compiled and edited by Eunice E. Winters and Anna M. Bowers (Thomas, $6.50).

Francis J. Mueller, M.A. '47, ED.D. '51: *Essential Mathematics for College Students*.

G. Canby Robinson, B.A. '99, M.D. '03, lecturer emeritus in medicine and preventive medicine: *Adventures in Medical Education* (Harvard, $5).

Irving Singer, visiting lecturer in philosophy: *Santayana's Aesthetics* (Harvard, $4.75).

Carl Brent Swisher, Thomas B. Stran professor of political science: *The Supreme Court in Modern Rôle* (New York University, $4.95).

Thomas B. Turner, professor of microbiology and dean of the School of Medicine, and David H. Hollander,

B.A. '32, M.D. '38, assistant professor of microbiology: *Biology of the Treponematoses* (World Health Organization Monograph Series, $6).

DEATHS

VALENTIN DE BALLA, PH.D. '31 (political science); on November 26, 1957. For the past three years he had lectured on the United States Government and the American way of life, in Spain and Austria. His home was the Flamhof Castle near St. Nikolai, Austria. Dr. de Balla graduated from the Austro-Hungarian military academy at Wienerneustadt and from the Sorbonne with highest honors in international law. At the outbreak of World War II he was trapped in Budapest during the two-month siege by the Nazis. During the Nazi occupation he worked with Cardinal Mindszenty in the underground and later with the Spanish legation in Hungary assisting the Jews. He then lived for two years under Soviet rule before he escaped in the private airplane of an American general in 1946. After the war he became professor of political science at Loyola College in Baltimore, a position he held until his return to Austria in 1953. He was the author of *The New Balance of Power in Europe*.

DAVID MOORE BARRETT, B.E. '32, G. '32–'33 (gas engineering); on August 31, 1957. He was the industrial sales manager of the Washington Natural Gas Company of Seattle.

JOHN YOUNG BATTENFIELD, M.P.H. '42; on September 17, 1957. He was co-owner of the Battenfield-Jones Hospital Clinic in Snyder, Texas. He had been director of the division of preventable diseases of the Oklahoma Department of Public Health, one-time physician-in-charge with the Firestone Plantation Company at Cape Palmas, Liberia, and director of medical services for the government of Guam.

P. JENKS CAMERON, B.A. '03; on November 28, 1957.

MARY TERESA GALLAGHER, B.S. '24, M.A. '26, G. '26–'29 (archaeology); on May 7, 1957. Before her retirement she had taught at Eastern High School in Baltimore.

LESTER H. GLIEDMAN, M.D. '50, Fellow '51–52, assistant professor of psychiatry; on May 21, 1958. He practiced psychiatry in Baltimore and directed two special studies of alcoholism for the Maryland State Department of Health. He was also engaged in a study of patient response to psychotherapy, a project supported by the U. S. Public Health Service and the Ford Foundation. He was a consultant to the Patuxent Institution where he did research and treatment of defective delinquents. He served as a trustee of the Maryland Prisoners Aid Society.

GORDON ROBERT GRAY, M.P.H. '36; on August 29, 1957. He was a public health officer with the State of New York, stationed in Johnstown.

REGINALD HARVEY GRIFFITH, G. '94–'96 (English); on December 10, 1957. He was professor emeritus of English at the University of Texas and curator of the Wrenn Library there.

FRANK ARNOLD HANCOCK, B.A. '97, G. '97–'00 (chemistry); on March 20, 1958. He was a retired brigadier general in the U. S. Army.

HARRY K. HARDCASTLE, B.A. '09; on February 24, 1958. Before his retirement he was manager of the Philadelphia office of the Electric Controller and Manufacturing Company.

GEORGE W. HARTMAN, M.D. '08; on December 24, 1957. He was living in San Francisco at the time of his death.

JOHN H. HAZELTON, B.A. '93; on December 20, 1957. He was a retired lawyer, living in Rockville Center, Long Island.

HELEN HEMPSTEAD (MRS. A. F.) FURRER, M.D. '05; on February 2, 1958. She was living in Cleveland, Ohio.

H. BROOKS HERING, B.A. '11; on November 18, 1957. He had been a vice president of the Baltimore Trust Company and later spent twenty-three years as a member of the advertising staff of Time, Inc. After retirement, he went with the New York brokerage firm of Reynolds and Company.

LOUIS FOLTAT HILDEBRANDT, B.A. '02, G. '02–'08 (Romance languages); on November 17, 1957.

GRACE ROSALIND HILDRETH, B.S. '45; on December 26, 1957. She was a teacher in the Baltimore public school system.

AUGUST FREDERICK JONAS, Jr., William S. Halsted Teaching Fellow '34–'36, fac. '35–'41 (surgery); on November 2, 1957. He was chief surgeon of the Kaiser Foundation Hospital in San Francisco and assistant clinical professor of surgery in the Stanford University Medical School.

HERMAN M. KATZ, B.A. '24; on October 8, 1957. He was a partner in and manager of a department store in Martinsburg, West Virginia.

WARREN G. KEITH, PH.D. '28 (history); on January 9, 1958. He was director of admissions at Mary Washington College in Fredericksburg, Virginia.

GRACE AMANDA KRAMER, B.S. '21, M.A. '24, PH.D. '30 (education); on February 14, 1958. She was a librarian in the Baltimore public school system.

REINE-AIMEE LACHAINE, research associate in epidemiology; on September 3, 1957. She had been engaged in research in pediatrics and epidemiology at Johns Hopkins since 1956.

DEBORAH CUSHING LEARY, house staff '39–'40 (obstetrics); on October 20, 1957. She was assistant professor of obstetrics and gynecology at the University of North Carolina School of Medicine in Chapel Hill.

MARIE L. C. LINTHICUM, B.S. '23, M.A. '24, G. '24–'26 (English); on July 15, 1957. From 1934 to 1950 she was a member of the faculty of Salem College in Salem, West Virginia.

EDWARD LYONS, PH.D. '17 (chemistry); on November 5, 1957. From 1939 until 1945 he was a research chemist with the Parke-Davis Company in Detroit, and from 1947 to 1951 he served as acting associate professor of chemistry at the University of Florida.

HOWARD A. MACCUBBIN, B.E. '23; on February 13, 1958. He was a manufacturers' representative living in Villa Park, Illinois.

WILLIS EDGAR MANEVAL, PH.D. '12 (botany); on January 21, 1958. He was living in Mill Valley, California.

JAMES GRAHAM MARSTON, B.A. '13, Medicine '13–'15, assistant physician in the out-patient department; on December 13, 1957. He was in general practice in Baltimore and on the staffs of the Johns Hopkins and Maryland General Hospitals.

LAURA MARY MOENCH, M.D. '19; on March 27, 1958. She was an instructor in medicine at the Cornell Medical School in New York City, and conducted general practice in New York and White Plains.

JAMES R. MOOD, PH.D. '04 (Latin); on April 21, 1956. He was a retired economist with the U. S. Tariff Commission.

RUFUS A. MORISON, M.D. '15; on November 22, 1957. He was chief of staff of the Johnston Memorial Hospital in Abingdon, Virginia.

LYMAN CLEMENTS MURPHY, B.A. '02, medicine '02–'05; on October 4, 1957. He was in practice in Wichita, Kansas.

JEROME OSCAR NEUMAN, B.E. '30; on March 22, 1958. He was living in Baltimore.

WILLIAM KLEBER NICHOLSON, B.E. '21; on January 6, 1958. He was an

GENTLEMEN* . . . BE SEATED!

*and Ladies!

CAPTAIN'S CHAIR—Now, for the first time, this popular chair is available in both an adult size and, in exact miniature, a child's size. Both are finished in black with gold trim. On both, the Hopkins seal is emblazoned in full color. They make wonderful gifts for home or office.

ADULT SIZE **$29.95**

CHILD'S SIZE **$15.95**

MATCHING CHAIR FOR LADIES—Another handsome addition to our line of Hopkins chairs, the ladies' model (*right*) is black trimmed in gold. The University seal is in full color. **$17.95**

THE JOHNS HOPKINS UNIVERSITY BOOKSTORE
Homewood, Baltimore 18, Maryland

Enclosed please find $_____. Please send me:

____ Man's chairs @ $29.95 ____ Child's chairs @ $15.95

____Lady's chairs @ $17.95

Shipping charge (from Gardner, Mass.) collected on delivery.
On orders to be shipped to Maryland addresses, add 2% tax.

NAME.....

ADDRESS.....

CITY.....ZONE....STATE.....

engineer with the Western Electric Company in Baltimore.

WILLIAM R. NORRIS, PH.D. '22 (chemistry); on October 28, 1956. He was a research chemist with the National Bureau of Standards in Washington, D. C.

MARY G. CARR (MRS. L. W.) NORTHUP, graduate nurse '25; on February 11, 1958. She was living in Springfield, Ohio.

WILLIAM PATRICK O'CALLAGHAN, M.P.H. '33; on May 3, 1956. He was lecturer in pathology in the public health department of University College in Dublin, Ireland.

GEORGE FREDERICK ORDEMAN, PH.D. '16 (chemistry); on May 29, 1957.

BERNARD MARK PARELHOFF, B.A. '07, G. '07–'08 (chemistry); on August 13, 1957. He was a retired teacher of mathematics at George Washington High School in New York City.

WALTER PEIRCE, PH.D. '06 (French); on October 29, 1957. Before his retirement he had taught French at Indiana University, Ohio State University, Yale, and, most recently, Santa Barbara State College in California.

THOMAS DOBBIN PENNIMAN, B.A. '92, PH.D. '98 (physics); on November 24, 1957. He was president of the E. J. Codd Company, manufacturers and machinists of marine engines and other equipment.

HENRY FARNHAM PERKINS, PH.D. '02, Fellow '16–'17 (zoology); on November 24, 1956. He was professor emeritus of biology at the University of Vermont and former director of the University Museum.

HELEN BOYD (MRS. ARTHUR P.) POWELL, graduate nurse '15; on November 7, 1957. She taught nursing in Iowa.

LOUIS MARCUS PRINDLE, G. '93–'95 (geology); on June 27, 1956. He had been with the U. S. Geological Survey until his retirement in 1935.

CAROLINA RAMSAY RANDOLPH, M.P.H. '38; on March 1, 1958. Before her retirement in 1955, she had been, for twenty-two years, an associate in the division of health studies and public health of the Commonwealth Fund of New York.

FRANCIS HAMILTON REDEWILL, M.D. '06; on December 19, 1957. He practiced urology in San Francisco from 1926 until 1956, and was a research associate in bacteriology at the University of California at the time of his death. Dr. Redewill was founder and first president of the American Physicians Art Association and the winner of many prizes for his oils and water colors.

JAMES ISAAC SCARBOROUGH, M.D. '08; on October 29, 1957. He had, prior to his retirement in 1947, practiced surgery in Little Rock, Arkansas.

RAYMOND BROWN SCOFIELD, M.D. '07; on November 17, 1957. He had been attending surgeon at St. John's Riverside Hospital in Yonkers, New York, and had lived, since 1950, in Bartlesville, Oklahoma.

JOHN WILLIAM SHEETZ, M.D. '10; on November 18, 1957. He practiced medicine in Columbus, Ohio.

LAURA BARBER SHINN, graduate nurse '15; on September 14, 1957. She had retired from active nursing and was living in Baltimore.

STANLEY DEVRIES SHIPLEY, G. '99–'02; on February 8, 1958. He was living in Stamford, Connecticut.

CORA BAKER (MRS. LEWIS F.) SMEAD, graduate nurse '05; on January 14, 1958. She was living in Toledo, Ohio.

KATE STANSBURY (MRS. EDMUND W.) WINCHESTER, B.S. '36; on November 25, 1957. She was living in Baltimore.

ARTHUR GEORGE SULLIVAN, M.D. '20; on September 30, 1957. He was a cardiologist with the Veterans Administration in San Francisco.

ARTHUR W. TAYMAN, B.S. '38 (electrical engineering), M.S. '48 (sanitary engineering); on January 15, 1958. He was chief administrator of the Prince Georges County, Maryland, Department of Public Works, and was a former president of the Maryland Association of Engineers.

LAWSON THORNTON, M.D. '10; on June 26, 1957. He was a practicing orthopedic surgeon in Atlanta, Georgia.

SAM FARLOW TRELEASE, PH.D. '17, fac. '20–'23 (plant physiology); on March 1, 1958. He was Torrey professor of botany and chairman of the department of botany at Columbia University and a member of the board of managers of the New York Botanical Garden. He was co-author of *Selenium: Its Geological Occurrence and Its Biological Effects in Relation to Botany, Chemistry, Agriculture, Nutrition, and Medicine.*

HENRY F. ULLRICH, Arts '23–'25; on March 24, 1958. He was clinical associate professor of orthopedic surgery at the University of Maryland and a governor of the American College of Surgeons.

BELLE UPSHUR, graduate nurse '11; on March 16, 1958.

EDWARD A. VALIANT, B.E. '49; on November 15, 1957. He was a captain in the U. S. Air Force.

DOUGLAS VANDERHOOF, M.D. '05, house staff '05–'06 (medicine); on October 31, 1957. He was professor emeritus of medicine at the Medical College of Virginia in Richmond, and was a member of the institution's board of visitors from 1929 to 1953 and chairman of the board from 1936. He was a director of the State-Planters Bank of Commerce and Trusts and a trustee of the Virginia Museum of Fine Arts.

SAMUEL A. VEST, M.D. '30, fac. '33–'39 (pathology and urology); on April 6, 1958. He was associate professor and chairman of the department of urology at the University of Virginia School of Medicine.

E. CURT WALTHER, ED.D. '41; on January 2, 1958. Before his retirement in 1955 he was professor of geography and social science at Towson State Teachers College. He had been on the faculty there for thirty-three years.

LILLIAN CARLENE WARFIELD, graduate nurse '31; on December 3, 1957. She was a nurse with the National Gallery of Art health service.

CHARLES HANSELL WATT, M.D. '12, house staff '12–'15 (surgery); on January 27, 1958. He was practicing medicine in Thomasville, Georgia.

REBEKAH A. WENTZ (MRS. FRANK J.) RILEY, graduate nurse '16; on August 10, 1957.

THE ALUMNI

The late JOHN M. T. FINNEY, G. '89–'90 (pathology), fac. '93–'42, professor emeritus of surgery, will be honored by the construction of a new athletic field at Princeton University, to be known as Finney Field.

THEODORE E. STRAUS, B.E. '94, has been elected to the State of Maryland Athletic Hall of Fame for his all-around athletic ability.

DONALD M. LIDDELL, B.A. '00, has been awarded the 1957 Gold Medal of the Mining and Metallurgical Society of America for "unusual contribution to the art of nonferrous metallurgy and research in connection therewith."

ALPHONSE R. DOCHEZ, B.A. '03, M.D. '07, fac. '19–'21 (medicine), has been awarded the New York Academy of Medicine Medal for his distinguished service in medicine.

WILLIAM RUSH DUNTON, JR., fac. '03–'42 (psychiatry), has received the American Occupational Therapy Association Award of Merit for his contributions to the field of occupational ther-

A Johns Hopkins Gazette

CONTINUED

apy. For many years he was editor of the journal, *Occupational Therapy and Rehabilitation*, now known as the *American Journal of Physical Medicine*.

FRANK G. BREYER, B.A. '08, M.A. '10 (chemistry), has been presented an award for chemical engineering achievement by *Chemical Engineering* "for meritorious contributions to the extractive metallurgy of the atomic age, particularly for research, development, and efficient application of chemical engineering principles and processes in the recovery of metals vital alike to the national security and the civilian economy."

CHARLES DWIGHT REID, M.D. '12, has been appointed medical director of the New Mexico Rehabilitation Center in Albuquerque.

HERSCHEL H. ALLEN, G. '13–'14 (civil engineering), has been elected president of the American Institute of Consulting Engineers. He is a senior partner in the firm of J. E. Greiner Company.

HAROLD J. STEWART, B.A. '15, M.D. '19, M.A. '23 (medicine), has been promoted to professor of clinical medicine at the Cornell University School of Medicine.

MARTIN B. KOHN, B.A. '17, president of Hochschild, Kohn and Company, a Baltimore department store, has been elected president of the Baltimore Association of Commerce.

REUBEN OPPENHEIMER, B.A. '17, judge of the Supreme Bench of Baltimore, has been named a member of the committee on the Bill of Rights of the American Bar Association.

T. HUNTON ROGERS, PH.D. '17 (chemistry), has retired as director of research for the Standard Oil Company of Indiana. He joined the company in 1922 when its research staff numbered twenty-five; he became director of research in 1947; there are now 350 researchers on the staff. In 1947 Dr. Rogers was named as one of the ten leading chemists in the petroleum field. He has been awarded an honorary degree by Centre College in Danville, Kentucky, and is a trustee of that institution.

MERRILL C. SOSMAN, M.D. '17, professor emeritus of radiology at Harvard Medical School and radiologist-in-chief emeritus at the Peter Bent Brigham Hospital in Boston, has been awarded the Gold Medal of the Radiological Society of North America.

MARTHA M. ELIOT, M.D. '18, professor and chairman of the department of maternal and child health at the Harvard School of Public Health, has been awarded an honorary Sc.D. by Wayne State University.

WILDER PENFIELD, M.D. '18, director of the Montreal Neurological Institute, has been chosen recipient of the *Medaille Lannelongue*, the highest award of the French Academy of Surgery. The academy awards the medal at five-year intervals. Dr. Penfield holds fourteen honorary degrees. In 1953 he received the Order of Merit, the British sovereign's highest award for service to humanity, limited to twenty-four living persons.

BERNARD A. SULLIVAN, B.S. '18 (engineering), has retired as plant training engineer of the American Telephone and Telegraph Company.

JOHN R. PAUL, M.D. '19, has been selected as one of fifteen scientists named to the Polio Hall of Fame in Warm Springs, Georgia. Dr. Paul, a virologist at Yale University, has made many contributions to the knowledge of polio, particularly of how the virus is spread. In 1938 he received the first virus research grant of the National Foundation for Infantile Paralysis. Dr. Paul is professor of preventive medicine at the Yale University School of Medicine and is director of the Yale Poliomyelitis Study Unit.

The late REGINALD M. ATWATER, M.P.H. '20, DR.P.H. '21, was posthumously awarded a prize by the Albert and Mary Lasker Foundation for service to the public health profession and to the American Public Health Association, of which he was executive secretary.

DONALD L. AUGUSTINE, SC.D. '23 (hygiene), has been elected president of the American Society of Tropical Medicine and Hygiene.

BENSON BLOOM, B.A. '22, M.D. '26, has been appointed assistant director of professional services at the Veterans Administration Hospital in the Bronx, New York.

MARTIN FROBISHER, B.S. '22, SC.D. '25 (hygiene), fac. '25–'28, '32–'52 (medicine), has been chosen editor of the journal of the American Society of Tropical Medicine and Hygiene.

CARL E. W. SCHMEHL, B.S. '22, has retired as vice principal of Baltimore City College. Mr. Schmehl taught at City College for 36 years, and was vice principal since 1948.

PARKER C. WILLIAMS, B.A. '23, has resigned as director of the Cleveland district of the Internal Revenue Service in order to enter the private practice of law.

MADELAINE RAY BROWN, M.D. '27, has been selected Medical Woman of the Year by the New England Branch of the American Medical Women's Association. A neurologist, Dr. Brown has been fighting a personal battle against sclerosis for thirty years; since 1954 she has been confined to a wheel chair, yet she still sees patients in her private practice and as a part-time staff member of Massachusetts General Hospital, where she also teaches Harvard medical students.

WILLIAM G. EWALD, B.S. '28, executive vice president of the Retail Merchants Association of Baltimore, has been appointed chairman of the Baltimore Planning Commission.

ARTHUR V. GREELEY, M.D. '29, house staff '29–'31 (gynecology), has been promoted to associate professor of clinical obstetrics and gynecology at the Cornell University School of Medicine.

PERRIN H. LONG, fac. '29–'51 (preventive medicine), chairman of the department of medicine of New York University College of Medicine, has been appointed editor-in-chief of *Medical Times, the Journal of General Practice*.

WILLIAM GARDNER LYNN, B.A. '28, PH.D. '31, fac. '31–'42 (zoology), has been appointed professor and chairman of the department of biology at the Catholic University of America in Washington, D.C.

JAMES A. CRABTREE, M.P.H. '29, DR.P.H. '32, has been appointed dean of the Graduate School of Public Health at the University of Pittsburgh.

CARROLL E. PALMER, G. '29–'30, fac.

'30–'36 (biostatistics), chief of the operational research program of the Public Health Service's tuberculosis program, has received the Weber-Parkes award, given every three years by the Royal College of Physicians, in London, "for distinguished contributions in the field of tuberculosis." Dr. Palmer is the second American to receive this award.

GEORGE M. GLAZIER, B.S. '30, has been promoted to assistant general manager of sales of the American Oil Company.

BURRELL G. KILMER, B.A. '30, G. '30–'32 (Latin), has been appointed chief United States probation officer for the Federal Court in the district of Maryland.

E. MAXWELL SAUERWEIN, B.S. '30 (economics), business manager of the University '42–'46, has been elected assistant secretary and assistant treasurer of the Maryland Shipbuilding and Drydock Company.

JOSEPH F. SADUSK, JR., B.A. '31, M.D. '35, house staff '35–'39 (medicine and obstetrics), has been promoted to associate clinical professor of medicine at the Stanford University School of Medicine.

WALTER B. BELITZ, JR., B.E. '32, has been elected a vice president of the J. S. Young Company of Baltimore.

EDWARD C. DUKEHART, B.S. '32 (economics), has been elected president of the Real Estate Board of Baltimore.

AUREL O. FOSTER, SC.D. '33 (hygiene) has been elected president of the American Society of Parasitologists.

LENOX D. BAKER, house staff '34–'37 (orthopedics), has been given the 1957 Physician's Award of the President's Committee for Employment of the Physically Handicapped.

ALBERT B. FRIEL, B.S. '34 (chemistry), has been appointed assistant manager of the new du Pont de Nemours and Company titanium dioxide plant in New Johnsonville, Tennessee.

R. H. Hutcheson, M.P.H. '34, has been promoted to associate professor of preventive medicine and public health at Vanderbilt University.

HERMAN E. HILLEBOE, M.P.H. '35, has been elected president of the Association of State and Territorial Health Officers. For the past ten years he has been New York State Commissioner of Health.

ALEXANDER H. LEIGHTON, M.D. '36, has been promoted to professor of clinical psychiatry at the Cornell Univeristy School of Medicine.

DOROTHEA C. LEIGHTON, M.D. '36, house staff '37–'39, fac. '37–'42 (psychiatry), has been promoted to assistant professor of clinical psychiatry at the Cornell University School of Medicine.

ROBERT H. LEVI, B.S. '36 (economics), president of the Hecht Company of Baltimore and Washington, a group of department stores, has also been elected general manager of the company's Washington area stores.

GEORGE W. THORN, Rockefeller Fellow '36–'37, Read Ellsworth Fellow '38–'39, fac. '38–'42 (medicine), Hersey professor of the theory and practice of physic at the Harvard Medical School and physician-in-chief at Peter Bent Brigham Hospital, has been awarded the Buffalo Urological Society Medallion for "outstanding contributions relative to the specialty of urology."

WILLARD F. VERWEY, SC.D. '37 (hygiene), has been appointed professor and chairman of the department of microbiology of the University of Texas Medical Branch in Galveston.

ELIJAH ADAMS, B.A. '38, has been appointed professor of pharmacology and director of the department at the Saint Louis University School of Medicine.

MARGARET DERINGER BARRETT, M.A. '38 (zoology), PH.D. '42 (biology), has been honored by Hood College of Frederick, Maryland, as an outstanding representative of Hood College who has actively entered the field of science. She is a biologist in the laboratory of biology of the National Cancer Institute, and a trustee of Hood College.

L. KATHRYN DICE, B.S. '38 ED.D. '41, has been appointed state supervisor of psychological and guidance services of the Pennsylvania State Department of Public Instruction.

WALTER FLEISCHMANN, fac. '38–'52 (pediatrics), has been appointed chief of laboratory service at the Veterans Administration Center in Mountain Home, Tennessee.

Edward K. Kreml, B.S. '38 (engineering), lieutenant colonel, has retired after fifteen years of extended active duty in the U. S. Army.

ROBERT H. GREEN, M.D. '38, has been appointed associate professor of preventive medicine at the Yale University School of Medicine.

CHARLES B. METZ, B.A. '39, associate professor in the Oceanographic Institute of Florida State University, has been appointed associate director of the institute.

MARCELINO PASCAU, Fellow '39–'41, fac. '41–'48 (biostatistics), has been appointed director of the Latin American Center for Training and Research in Demography in Santiago de Chile.

FRANCIS J. WEBER, M.P.H. '39, DR.P.H. '51, has been appointed chief of the newly established division of radiological health of the U. S. Public Health Service.

WALTER C. BOYER, B.E. '40, M.A. '43, DR. ENG. '47, fac. '46–'55 (civil engineering), has been named director of engineering for the Maryland Port Authority.

WILLIAM D. HOYT, JR. PH.D. '40 (history), has been appointed associate professor of history at Merrimack College in North Andover, Massachusetts. He is chairman of the national committee for the collection and editing of the papers of Archbishop John Carroll.

EDWARD WENK, JR., B.E. '40, DR. ENG. '50 (civil engineering), has been elected president of the Society for Experimental Stress Analysis. He is chairman of the department of engineering mechanics at the Southwest Research Institute in San Antonio, Texas.

WILLIAM F. BRUCKSCH, JR., PH.D. '41 (chemistry), has been named manager of basic research for Naugatuck Chemical Company.

ROY HERTZ, M.P.H. '41, chief of the endocrinology branch of the National Cancer Institute in Bethesda, Maryland, has been presented the Anne Frankel Rosenthal Memorial Award for accomplishments in cancer research. The award was made at the annual meeting of the American Association for the Advancement of Science.

BERWYN F. MATTISON, M.P.H. '41, lecturer in public health administration, has resigned as secretary of health of the State of Pennsylvania to become executive secretary of the American Public Health Association in New York City.

JOHN J. HANLON, M.P.H. '42, has been appointed director of public health services of the Philadelphia Department of Public Health.

MARGARET BURGESS WILES, graduate nurse '42, has been appointed assistant director of the department of public health nursing of the National League for Nursing.

GEORGE J. JENKINS, B.E. '43, M.E. '47 (civil engineering), has been promoted to vice president of the J. E. Greiner Company of Georgia and Florida.

ROBERT IRVING WALTER, M.A. '43 (chemistry), has been promoted to associate professor of chemistry at Haverford College in Pennsylvania.

A Johns Hopkins Gazette

CONTINUED

E. Edmund Reutter, Jr., b.a. '44, has been promoted to professor of education at Teachers College of Columbia University.

Herman B. Wagner, b.e. '44, m.a. '45, ph.d. '48 (chemistry), has become director of chemical research at the Tile Council Research Center in Princeton, New Jersey.

Ralph L. Engle, Jr., m.d. '45, has been promoted to associate professor of medicine at the Cornell University School of Medicine.

Watts Rankin Webb, m.d. '45, has been appointed associate professor of surgery at the University of Mississippi School of Medicine. He is also chief surgeon at the Mississippi State Sanatorium.

Lewis Thomas, fac. '46–'48 (pediatrics), has been appointed professor and chairman of the department of medicine of the New York University College of Medicine. He is a member of the Board of Health of New York City, and is known for his early recognition of the danger of the indiscriminate use of cortisone in the treatment of infectious diseases. Dr. Thomas' new appointment will become effective with the retirement of William S. Tillett, m.d. '17, house staff '19–'21, fac. '30–'37 (medicine), at the end of the current academic year. Dr. Tillett will become full-time project director for research in allergy and infectious diseases.

Raymond Louis Carol, b.a. '47, has been promoted to associate professor of political science and American history at LeMoyne College in Syracuse, New York, not at LeMoyne College in Memphis, Tennessee, as previously stated in this department.

Murray A. Diamond, m.p.h. '47, has been appointed medical officer in charge of the United States Public Health Service Hospital in Lexington, Kentucky.

Carlos L. González, m.p.h. '47, dr.p.h. '48, has resigned as assistant director of the Pan American Sanitary Bureau of the World Health Organization. He has been elected principal senator for the state of Tachira, Republic of Venezuela, and will assume legislative responsibilities this spring.

Chandler A. Stetson, Jr., fellow '47–'48 (pediatrics), has been promoted to professor and chairman of the department of pathology at the New York University College of Medicine.

John Z. Bowers, fac. '48–'50 (preventive medicine), dean of the University of Wisconsin Medical School, has been appointed editor-in-chief of the *Journal of Medical Education*.

Russell J. Klingemeier, Jr., b.e. '48, has been promoted to lieutenant commander in the Civil Engineer Corps of the U.S. Navy.

William R. Magness, b.e. '48, has been appointed director of the research and technical department of Luria Brothers and Company, a steel manufacturer.

Robert E. Nesbitt, Jr., house staff '48–'52, fac. '49–'56 (obstetrics), chairman of the department of obstetrics and gynecology at the Albany Medical College of Union University, has been named as one of the ten outstanding young men of American for 1957 by the United States Junior Chamber of Commerce.

Goetz Wilfred Richter, m.d. '48, has been promoted to associate professor of pathology at the Cornell University Medical College in New York City.

John C. Wagner, sc.d. '48 (hygiene), has been appointed director of the Peruvian Institute of Public Health in Lima.

Frank Brink, Jr., fac. '49–'54 (biophysics), has been appointed to the newly created post of dean of graduate studies at the Rockefeller Institute in New York.

William E. Thompson, m.a. '49, ph.d. '51 (chemistry), has been appointed associate chairman of the department of chemistry and chemical engineering of the Southwest Research Institute in San Antonio.

Paul P. Weinstein, sc.d. '49 (hygiene), has been awarded the Bailey K. Ashford Medal of the American Society of Tropical Medicine and Hygiene.

Freydoun A. Afshar, ph.d. '50 (geology), associate professor of paleontology at the University of Teheran, is a deputy in the Majles, the Iranian Parliament.

William D. Faughnan, b.a. '50, g. '50–'51 (Oriental seminary), has been appointed chaplain at the Illinois Institute of Technology in Chicago.

William J. Hall, b.a. '50, has been appointed visiting assistant professor of statistics at the University of North Carolina in Chapel Hill.

George B. Koelle, m.d. '50, Chalfont Fellow '46–'50 (ophthalmology), professor of pharmacology and chairman of the department of physiology and pharmacology at the University of Pennsylvania School of Medicine, has been appointed dean of the Graduate School of Medicine of the University of Pennsylvania.

George E. McDonough, m.a. '50 (writing), has been appointed chairman of the department of English of Cascade College in Portland, Oregon.

Beverly Cook Rich, b.s. '50, has been appointed vice president of the Worcester Wire Novelty Company in Baltimore.

Clifton Krebs Yearley, Jr., b.a. '50, ph.d. '53 (history), has been promoted to assistant professor of history and social sciences at the University of Florida in Gainesville.

John C. Cutler, m.p.h. '51, has been appointed assistant director of the National Institute of Allergy and Infectious Diseases in Bethesda, Maryland.

Charles W. Denko, m.d. '51, has been appointed assistant professor of internal medicine and a research associate in the Rackham Arthritis Research Unit at the University of Michigan College of Medicine.

George R. Elder, Jr., b.e. '51, has been promoted to vice president and director of the Artesian Water Company of Wilmington, Delaware.

Sonia F. Osler, m.a. '51, ph.d. '53 (psychology), has been promoted to associate professor of psychology at Goucher College.

Robert O. Payne, m.a. '51, ph.d. '53 (English), has been promoted to associate professor of English at the University of Cincinnati.

Elizabeth Hay, m.d. '52, fac. '53–'57 (anatomy), has been appointed assistant professor of anatomy at Cornell University School of Medicine.

Paul Meier, fac. '52–'57 (biostatistics), has been appointed associate professor of statistics at the University of Chicago.

Marie M. Delaney, m.s. '53 (biostatistics), has been appointed chief of the employee statistics section in the division of program analysis at the Bureau of Old Age and Survivors Insurance.

Reynold C. Merrill, m.d. '53, has been appointed medical director of Organon, Inc., a pharmaceutical manufacturer in Orange, New Jersey.

David B. McCalmont, g. '54–'57 (political economy), has been appointed assistant professor of economics at Franklin and Marshall College in Lancaster, Pennsylvania.

William C. Thomas, Jr., hospital staff '54–'57, has been appointed assist-

ant professor of medicine and director of postgraduate education at the University of Florida College of Medicine in Gainesville.

BERNARD F. ROSENBLUM, M.P.H. '54, has been appointed director of the venereal disease division of the North Carolina State Board of Health.

JOHN H. HOKE, DR.ENG. '55 (mechanical), has been appointed supervisor of the stainless steels section of the Crucible Steel Company of America's central research laboratory in Pittsburgh.

STANLEY KELLEY, JR., PH.D. '55 (political science), has been appointed assistant professor of politics at Princeton University.

WILBUR B. PAYNE, fac. '55–'57 (ORO), has been appointed associate professor of physics at Virginia Polytechnic Institute.

JERRY ALLAN ROSE, B.A. '55, has been appointed assistant professor at the New York State College for Teachers in Buffalo.

ROBERT M. BURTON, PH.D. '55 (biology), has been appointed assistant professor in the School of Medicine of Washington University in St. Louis. He is working with the Beaumont-May Institute of Neurology.

CHARLES R. DECHERT, G. '56–'57 (SAIS), has been appointed professor of social studies at the Universita degli Studi Sociali in Rome, Italy.

BORIS P. PESEK, fellow '56–'57 (political economy), has been appointed assistant professor of economics at Michigan State University.

ROBERT SEAGER, II, G. '56–'57 (SAIS), has been appointed associate professor of history at Denison University in Granville, Ohio.

PHILIP R. BECKJORD, DR.P.H. '57, has been appointed assistant chief of the preventive medicine division in the office of the Army Surgeon General in Washington, D. C.

ROBERT A. DURR, PH.D. '57 (English), has been appointed assistant professor of English at Syracuse University in New York.

ERICH ISAAC, PH.D. '57 (geography), has been appointed assistant professor of geography at Temple University in Philadelphia.

THOMAS C. MAYER, M.A. '57 (biology), has been appointed assistant professor of biology at Greensboro College in Greensboro, North Carolina.

MICHAEL J. PESCOR, M.P.H. '57, has been appointed medical director of the operations of the United States Public Health Service in the Southwest.

GERALD ALFRED SMITH, PH.D. '57 (English), has been appointed assistant professor of English at the Universiy of Rochester.

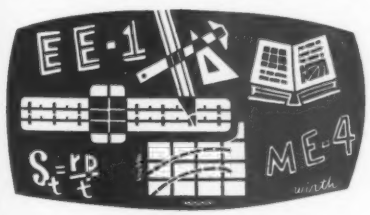
STANLEY FAUSST YOLLES, M.P.H. '57, has been appointed director of the mental health study center of the National Institute of Mental Health in Bethesda, Maryland.

MARY JEAN SCOTT, PH.D. '58 (physics), has been appointed lecturer with the rank of assistant professor in the department of physics at Bryn Mawr College in Pennsylvania.

Businessman Scientist

Continued from page 13

The Baird firm always has done quite a bit of custom contract research, but now this kind of work is most sought when it seems likely to develop a product with a fairly large market. Two years ago the government gave Baird a "crash" job: to try to make a sextant for celestial navigation for single-seater planes. Forty-seven days



after they were given the idea and the go-ahead, the firm's staff had a sextant in the air. "It was sealing wax and string to a certain extent," says Dr. Baird, "but it worked well enough for the people to want more of them. From one, the order went to five or ten and then ten or fifteen. We now have a flight evaluation test by the Air Force which states that, as far as they are concerned, this instrument will do anything that any previous one did. In fact it does it somewhat better, because the pilot doesn't have to hold anything in his hands. All he has to do is twiddle a couple of dials and just look." The sextant is now being carrier-tested and is going into Navy aircraft as well. This, Dr. Baird points out, is how a research study can develop a commercial product.

OVER THE YEARS, the Baird firm built an excellent research reputation and gained the prestige accorded to manufacturers of really first-rate equipment. It made hundreds of different products. Each year, managing the diverse lines became more complicated. Recently, the directors of the company (in 1947 Baird Associates became a corporation) decided to put more emphasis on marketing and to concentrate on fewer lines of equipment.

Baird's own sales force concentrates on capital goods in two fields: the metals industry and the pharmaceutical-petrochemical-chemical industry. The former uses the sort of spectrographic equipment first produced by Baird Associates twenty years ago, as well as the direct-reading spectrometer, developed after the war, which analyzes samples within thirty or forty seconds for the presence and amount of eight to twenty different metals simultaneously. The quantitative results of an analysis are read directly from dials, eliminating any need for technical interpretation. The pharmaceutical - petrochemical - chemical industry uses such infra-red equipment as the infra-red gas-liquid analyzer, a process-control device which graphically records the variations in a substance's purity.

Another piece of equipment used in the industry is the infra-red recording spectrometer, which analyzes almost any compound for its entire chemical content—all types of organic chemicals simultaneously—and records on a chart the evidence of the molecules present, eliminating the time-consuming manual computations required to get final results from other recorders. An infra-red expert using the machine can, in minutes, learn more about the molecular structure of an organic substance than he could in weeks of laboratory analysis. Perhaps its most spectacular use was in the development of synthetic Penicillin G. For three years, numerous attempts to determine the exact molecular structure of this form of penicillin ended in failure. The recording spectrometer gave scientists the needed clue. Today, use of the fourteen-thousand-dollar instrument is widespread.

In 1956, Baird Associates merged with

and absorbed the Atomic Instrument Company of Cambridge, Massachusetts. The merger gave the new firm, Baird-Atomic, an extensive line of atomic instrumentation, which is sold by Atomic Associates, a sales firm with offices all over the country.

Baird-Atomic's third major sales line is electronic equipment. Dr. Baird describes these items as "no world-beaters today, in terms of volume, but a growth line." There are twenty independent electronics distributors selling Baird-Atomic goods in the United States.

The year in which Walter Baird sold his first x-ray tube, Baird Associates' net sales totaled two hundred and thirty dollars. When the firm was incorporated, in 1947, net sales were 383 thousand dollars. In 1956, when Dr. Baird resigned as president, after twenty years, to become chairman of the board, net sales were over four million dollars. Sales in 1957 exceeded 6.6 million dollars.

"We decided to emphasize the sales end of the business," Dr. Baird says. "I don't know how other managers feel about this kind of thing, but from my point of view the only way to change the spots is to change the animal, too. When I became chairman of the board, we brought in a new young fellow, Dr. Davis R. Dewey, II, whose grandfather, by the way, was a Hopkins graduate, to be the president. His attitude very definitely is oriented toward the marketing side of things, though he is trained in sciences, too."

Now that he is free of the day-to-day responsibilities of management, Dr. Baird considers it his job to look two or three years ahead to new developments, to what is going to be needed, and to what the company's position will be with respect to these needs. Dr. Baird is concerned with integrating the development of new lines—fitting together the puzzle of the future. He still does quite a bit of selling to the government; he likes to talk to government people about the things that are three to five years in the future.

In winter, he works six days a week. During the spring and summer he trims his schedule slightly, in favor of sailing his fifty-two foot ketch. "I love it dearly," says Dr. Baird. He sails whenever he can, even on weekday evenings if he doesn't have too much reading to do.

Dr. Baird is a member of the visiting committees for astronomy and physics at Harvard University. In 1954 he was elected to a four-year term as an alumni trustee of Johns Hopkins. His chief interests as a trustee were the engineering curriculum and a visiting committee program.

About the future prospects of Baird-Atomic, Dr. Baird says, "The rate of growth is pretty much a question of the energy and wisdom that management is able to put into growth. When I say wisdom, I mean picking the right things out of a whole string of things that look as if they have the most potential. I don't know any reason at the moment why, leaving out years when you are going through some kind of economic upset, the growth can't be twenty-five or thirty per cent a year." —R.L.

A Hospital's Self-Examination

Continued from page 5

workers averages ninety per cent per year. New employees are paid while they go through a six-week training program. It takes six months of work by one of these people before the Hospital can break even on its investment in his training. But only one in four new workers remains as long as six months; most quit at the end of the training period.

The problem of auxiliary labor involves more than wage costs. The cost of recruiting and training is also high. Five of the nursing department's most competent people devote all of their time to a formal training course for replacements. Constantly inducting and training new employees imposes a burden on almost all of the experienced members of the nursing staff and limits, to an extent, the effectiveness of patient care. The more new employees demanding the attention and supervision of experienced staff, the less attention each can get, and the more likely they are to fail or quit. The turnover problem becomes self-aggravating.

Why is there such a high turnover of auxiliary staff? The operations researchers believe one reason is that the workers do not have a sense of belonging. In a highly status-conscious atmosphere, the auxiliaries are a group without status. The ultimate solution lies in finding better criteria for selecting job applicants (what difference is there between the employee who stays and the employee who doesn't?), up-grading the nature of their work, improving the environment in which it is performed, giving the employees more feeling that they are an important part of the Hospital's operation, and increasing the amount of time they spend in direct patient care.

As a result of operations research studies, some procedures have been revised to eliminate time-consuming, non-scheduled duties performed by the nursing department on the wards. Many of these duties involve services ancillary to patient care. Centralizing such services permits far more efficient scheduling of activities on the wards.

In the past, for example, the radiology department asked the nurse on a ward to bring patients down for treatment or diagnosis when the department was ready for them. This meant that the nurse or one of her staff had to leave the patient area, often for an extended time. Patients were channeled to radiology from all parts of the Hospital, and each trip required the services of someone who could have been giving direct patient care.

Because such demands are more regular at their point of origin than they are at each point of focus, Dr. Flagle's group recommended that the radiology department be provided with its own escorts. Centralizing the escort duties resulted in more efficient ward operation, and reduced delays in getting patients to the radiology service. The same advantages were realized by centralizing a messenger service and certain hospital supplies.

Ruth Preston is working on another project which would provide each patient area with its own small inventory of emergency drugs. This will virtually eliminate unscheduled trips to the pharmacy which nurses must now make to fill special, unpredictable orders.

In an analysis of ward nursing made in 1955 by George Cramer for his master's degree in industrial engineering, he found that while the head nurse spent more than one hundred per cent of her time in useful activity (she was

often observed doing two things at once), the ward clerk was usefully active less than fifty per cent of the time.

It was as a result of Cramer's study that the Hospital director approached the University with the plan to create a permanent research group at the Hospital. He was impressed with the value of the study and concerned about the Hospital's own ability to reorganize responsibilities. In June, 1956, the first attempt was made, under the nursing faculty's direction, to relieve the head nurse of some of her paper work, and to give the clerk more responsibility.

In a large part of the Hospital the clerk is now handling many of the administrative chores and doing most of the paper work formerly done by the head nurse. The nurse now has more time to work directly with patients, to supervise students and staff, and to teach. Clerks now take part in expanded training programs, they feel more a part of the Hospital's operation, and, with good reason, they have the feeling of higher status than before.

To determine the time required for direct patient care, Robert Connor, B.E. '56, a doctoral candidate in industrial engineering and an operations research assistant at the Hospital, sat by the bedsides of a hundred medical, surgical, and ophthalmological patients and noted—in sequence and by time of day—every service performed for each patient. He assessed the patient's condition in terms of ability to see, need for isolation, mental state, and mobility. He divided the need for patient care into three categories: complete care, partial care, and self care. Complete-care patients required, on the average, three hours of nursing time a day; partial-care patients required one hour daily; and self-care patients half an hour.

Connor made the important discovery that the number of patients in each category is highly variable from day to day on any ward. The patient-care work load can almost triple on any ward from one day to the next. The inevitable conclusion was that a single fixed staff on each ward is not the best way to meet patient needs.

The alternative is what Dr. Flagle calls "controlled variable staffing." This is a staff which can be variably assigned, on the basis of daily reports which indicate the number of patients in each category on each ward. Thus a hospital-wide pool of nursing personnel is necessary. This pool would supplement a core staff on each ward, according to the needs on any given day.

To develop this ideal staffing method on a practical level, Sidney Singer, a graduate student from Toronto, is devising a way to forecast the number of patients in each care category on each ward from one day to the next. Ideally, the nurse in charge of each ward would make these classifications and thus estimate personnel needs for the day. Another graduate student and research assistant, Richard K. C. Hsieh, from Formosa, is relating the variability in demand for linen and other supplies to these daily changes in patient-care needs from ward to ward.

These procedural changes not only minimize the effects of unpredictable demands on the efficiency of the nursing service, but they also make it possible to reduce the over-all size of the auxiliary staff.

Another important method of cutting down the size of the staff has been the introduction of labor-saving equipment in the patient-care areas.

But no item of equipment, no procedure, can be evaluated as an entity in itself. The evaluation of labor-saving equipment has meaning only in the context of the whole system in which it is to be used. Disposable equipment represents a tremendous potential saving in labor costs. But disposables usually save time in small increments. Only when systems are developed which permit the saving of time in large enough increments to reduce the payroll, or increase the amount of time available for direct patient care, do the potential savings offered by disposable supplies become real.

Two paths of action are necessary for the hospital considering the use of labor-saving equipment: the reorganization of staff and responsibilities to take advantage of the potential savings, and the improvement of supplies and their method of distribution.

To set the stage for an ultimate reduction in the size of the auxiliary staff, a central supply department has been established at Johns Hopkins. It is directed by Miss Janet Beach, who recommended and designed the physical layout and functions of the department while a resident in hospital administration at Johns Hopkins.

The Operations Research Division, in coöperation with the supply services, is now considering the establishment of a graduate fellowship in hospital systems analysis and products testing. This would make possible a more intensive evaluation of old methods and the development, design, and testing of new materials. The manufacturer, the distributing agency—the supply departments—and the consumer, represented by the OR staff, all of whom have a stake in the success of these supplies, would work together on their development. Already in use at Johns Hopkins is such pre-packaged and disposable equipment as drainage tubing, enema kits, medication cups, and intravenous solutions. Tests are now being run on disposable syringes and catheters.

To test the findings of their studies, the operations research staff felt it was essential to set aside one ward as an experimental center. In the fall of 1957 the Division of Nursing Resources of the United States Public Health Service approved a thirty-six-thousand-dollar grant to support a project titled "Optimal Organization and Facility for a Nursing Unit." Funds were provided for an experimental ward. In this ward the best possible organization, equipment, and procedures were to be developed.

The experimental ward carries its full

share of patients and few noticeable physical changes have been made. But its primary function now is that of a guinea pig for research in organizing hospital care.

New staffing ideas, definition of responsibilities among departments, patient-care procedures, and products are tested there. Observations and measurements of patient reaction, employee acceptance, and economy of different systems are made. It is where Singer gets the data he needs for his work on daily patient load forecasting. It is where Hsieh measures the quantity of supplies used daily. It is where new products will be tested. Later, the area will be used for demonstrations and training.

Although focused on one nursing unit, the inpatient studies have hospital-wide significance. They are all concerned with the interacting procedures of medical, nursing, and administrative groups, and of auxiliary departments. These interactions exist in every patient-care situation.

THE outpatient may visit the Hospital for only a few minutes of medical attention, yet his visit must be scheduled; he must pass through an admitting procedure on his first visit; he must pay his fee; he may need to schedule a reappointment; and he may need to have a prescription filled. There is often a substantial wait between each of these procedures, and the total visit may consume hours of the patient's time.

Under Dr. Flagle's direction, a number of outpatient studies are being made to find ways to reduce delay to the patient, reduce congestion of hospital space caused by waiting patients, and still assure the physicians an uninterrupted flow of patients. The outpatient studies recently received financial support from the Division of Hospital and Medical Facilities of the United States Public Health Service.

One study of outpatient congestion has been made in the dispensary of the Harriet Lane Home, the pediatric service at Johns Hopkins. Martin Taylor, a Canadian graduate student, working with Dr. Ira Gabrielson, other physicians, and administrators, has developed a plan for physical revision of the plant and reorganization of outpatient administrative procedures. By applying queueing theory, Taylor was able to provide parallel paths for patients going through the clinic. This reduces the number of stops each patient must make and speeds up the entire operation of the department.

Dr. Edward Maumenee, chairman of the department of ophthalmology, requested that a study be made of the outpatient department of Wilmer Clinic with the aim of doubling the number of patients it was possible to see. Abraham Soriano, an Israeli research assistant, working with Dr. Stuart Wolff, resident in ophthalmology, devised some special work-measurement techniques for use in studying ophthalmological and administrative procedures. Here again the problem is one of long delays for the patient and much waste of the physician's time.

A graduate student in the Johns Hopkins psychology department, Miss Miriam Aronstein, is studying the procedures involved in dispensing medicines to patients. She is concerned not only with the design of the procedures which insure proper medication, but also with the design of the physical facilities where medicines are prepared.

Another woman, Mrs. Frances Wright, who has had considerable experience in hospital studies in her native England, has joined the OR team to study the nature of demands on the emergency department. She is interested in the distribution of accidents by type and time of day. She is trying to determine some criteria for the allocation of facilities and staff in a situation completely lacking any sort of control. Mrs. Wright plans to use this study as part of her work toward a degree in biostatistics from the School of Hygiene and Public Health.

The problems presented by outpatient services generally involve coordination of the flow of patients and their case records. Uneven outpatient service is aggravated by the varying arrival times of patients and the varying lengths of time needed to treat them. Queueing theory indicates that the solution to congestion problems is a reduction in the number of individual steps through which a patient must go (waiting usually occurs at each step), and the provision of parallel lines for easier traffic flow. This means some duplication of equipment and increased versatility of administrative staff, plus some additional cost. But because of the ever-increasing demands for outpatient care there is a serious need for means of increasing the capacity of clinics.

IT has been two years since the University and Hospital established the operations research program. The nursing department coöperates closely with it, as do many physicians and administrators. An aggressively administered supply department has been formed; it also works with the operations research personnel.

Procedures which are proved worthwhile on the experimental ward will be extended throughout the Hospital as quickly as possible. So far the program has been primarily an administrative one, concerned with the organization of, and support between, various departments.

As the Hospital continues to increase the economy and efficiency of its operation, OR's emphasis will shift from administrative to medical and public health problems. What has been done so far has been just the first step in analyzing hospital operations. The next step will be a move from internal to external concerns. Dr. Flagle anticipates a greater participation by OR analysts, working with physicians and nurses, in the study of direct patient care. He foresees a greater use of biostatistics and the social sciences, and more coöperation with hospital planners and architects.

The studies at Johns Hopkins are unique only in their specific detail. Their importance extends far beyond the walls of any one institution; they are significant to every medical center in the United States. Just as the problems of one ward are likely to reflect the problems of all wards, the problems of one hospital reflect the problems of all hospitals, and the solutions found in one institution should indicate, in a broad sense, the solutions for other institutions. —R.L.

THE SPORTS YEAR

A summary of Johns Hopkins varsity results, 1957-1958

FOOTBALL

Franklin and Marshall	13	Hopkins	6
Hopkins	13	Washington and Lee	12
Hampden-Sydney	25	Hopkins	13
Hopkins	0	Randolph-Macon	0
Hopkins	40	Swarthmore	20
Hopkins	13	Dickinson	13
Hopkins	19	W. Maryland	0

SOCCER

Hopkins	2	Gettysburg	2
Swarthmore	3	Hopkins	1
Drexel	7	Hopkins	3
Hopkins	3	Loyola	2
Hopkins	1	Towson	0
Franklin and Marshall	3	Hopkins	0
Washington	1	Hopkins	0
Maryland	7	Hopkins	2
Hopkins	3	Delaware	0
Hopkins	4	W. Maryland	2

CROSS COUNTRY

Franklin and Marshall	27	Hopkins	29
Hopkins	29	Loyola	30
Hopkins	15	Delaware	41
Swarthmore	22	Hopkins	37
Hopkins	19	Washington	37
Hopkins	15	Towson	45
Hopkins	17	Penn Military	44

Mason-Dixon Championships 3rd Place

BASKETBALL

Swarthmore	71	Hopkins	55
Hopkins	71	W. Maryland	68
Hopkins	60	Towson	49
Haverford	71	Hopkins	66
Delaware	89	Hopkins	70
Gettysburg	75	Hopkins	74
Franklin and Marshall	79	Hopkins	68
Hopkins	66	Catholic	63
Hopkins	64	Washington	57
Dickinson	71	Hopkins	65
Rutgers	55	Hopkins	43
Hopkins	73	M.I.T.	68
Hopkins	77	Towson	54
Loyola	68	Hopkins	54
Hopkins	78	W. Maryland	69
Loyola	52	Hopkins	50
Hampden-Sydney	92	Hopkins	68
Hopkins	64	Randolph Macon	60
Hopkins	75	Ursinus	47

Mason-Dixon Tournament:

Hampden-Sydney	81	Hopkins	56

FENCING

Pennsylvania	22	Hopkins	5
Navy	23	Hopkins	4
Hopkins	22	Lehigh	5
Hopkins	15	Temple	12
Hopkins	23	Muhlenberg	4
Hopkins	16	Haverford	11

BASEBALL

Bowdoin	5	Hopkins	2
Hopkins	4	Harvard	3
Randolph-Macon	12	Hopkins	6
Hopkins	7	Loyola	2
Ursinus	14	Hopkins	1
Towson	8	Hopkins	2
Delaware	24	Hopkins	1
Swarthmore	6	Hopkins	2
W. Maryland	11	Hopkins	0
Catholic	7	Hopkins	4
Loyola	6	Hopkins	4
Hopkins	10	W. Maryland	4
Washington	12	Hopkins	3
Hopkins	3	Dickinson	2

LACROSSE

Hopkins	17	Rutgers	5
Hopkins	16	Virginia	6
Hopkins	16	Princeton	7
Hopkins	14	Washington and Lee	11
Hopkins	21	Loyola	3
Hopkins	19	R.P.I.	4
Hopkins	14	Navy	7
Hopkins	11	Maryland	10
Mt. Washington	10	Hopkins	4

GOLF

Dartmouth	9	Hopkins	1
Gettysburg	13	Hopkins	5
Hopkins	16½	Washington	4½
Hopkins	12	Franklin and Marshall	6
Delaware	12	Hopkins	6
Hopkins	8	Loyola	1
Hopkins	10	W. Maryland	8
Hopkins	4	Juniata	1

TRACK

Swarthmore	78⅙	Hopkins	47⅚
Hopkins	78⅓	W. Maryland	43⅔
Gettysburg	72	Hopkins	59
Delaware	78½	Hopkins	52½
Dickinson	74½	Hopkins	51½
Hopkins	71⅙	Loyola	50⅚

TENNIS

Hopkins	5	Randolph-Macon	3
Hopkins	6	Gettysburg	2
Delaware	9	Hopkins	0
Hopkins	7	Towson	2
Hopkins	6	W. Maryland	3
Hopkins	6	Loyola	3
Hopkins	5	W. Maryland	4
Hopkins	7	Catholic	2
Hopkins	7	Loyola	2

The Johns Hopkins Magazine
Homewood, Baltimore 18, Md.

Return Postage Guaranteed

What does it cost to educate a man? Far more than the tuition a student must pay. The difference must come from those who recognize the value of higher education and who, by their support, invest in its continuance and in our way of life.

JACOB L. HAIN
Investment Adviser
Fifth and Penn Streets
Reading, Pennsylvania
TELEPHONE: *Reading 4-8388*